Advanced Data Management & Analysis Branch Code587

Branch Technical Status Report

February 26, 2004

James Byrnes

Agenda

- Peer-to-Peer Science Data Environment (P2PSDE) Overview
- Staffing
- Project Summary

P2PSDE: Goals

- Develop a Peer-to-Peer, cross-platform, distributed architecture for enabling characterization and selection of remotely available space science data using JXTA
- Implement a prototype set of software that employs this architecture and demonstrates access and selection of science data, specifically using existing data sets of interest to the space scientist, such as publicly accessible magnetometer, plasma, and wave data.

P2PSDE: Staffing

- Matt Holland/587 (0.5 CS)
  - PI, System Design
- Kathryn Rash/587 (0.3 CS)
  - User Interfaces, Implementation
- Chris Howard/587 (0.3 CS)
  - Data Collection, Implementation
- Tom Narock (0.2 SSC)
  - Metadata Definition

What is JXTA?

- JXTA is a Peer-to-Peer Architecture developed by Sun Microsystems
- JXTA technology is a set of open protocols that allow any connected device on the network ranging from cell phones and wireless PDAs to PCs and servers to communicate and collaborate in a P2P manner
- JXTA peers create a virtual network where any peer can interact with other peers and resources directly even when some of the peers and resources are behind firewalls and NATs or are on different network transports

JXTA: Where to find more information

- JXTA Home Page - http://www.jxta.org/
- Motto
  - Find It
  - Get It
  - Use It

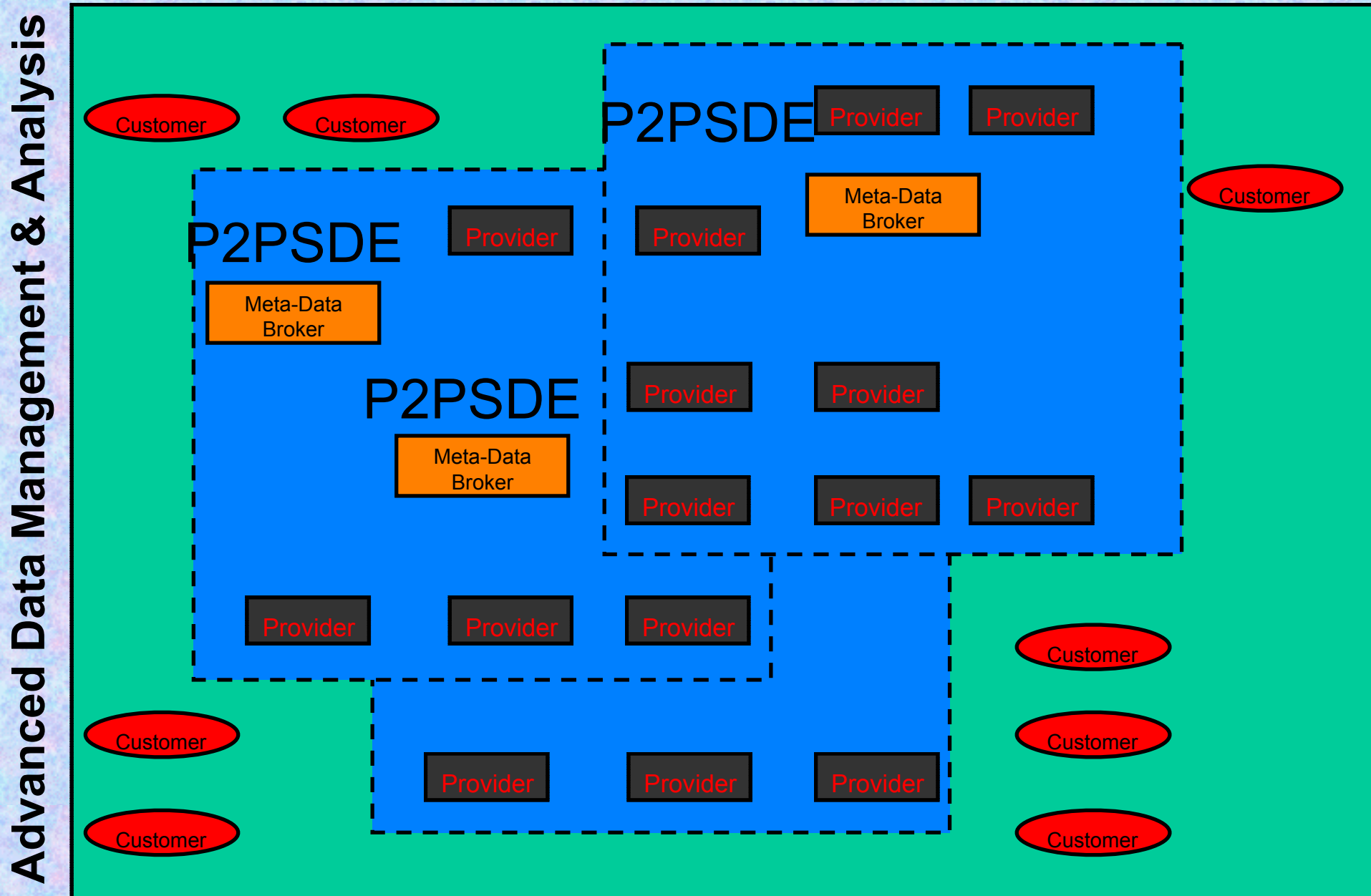
P2PSDE: Preliminary Functions

- A Peer-to-Peer infrastructure for discovery and transfer of science data
- A user interface (portal) with a basic searching capability on science data services
- A download capability to directly transfer data from a science data service provider

P2PSDE: Future Plans

- Develop a software API that will enable reliable data streaming directly into a user defined analysis application
- Develop extended data query capabilities based on comprehensive meta-data descriptions
- Provide peer data services that offer value-added functionality such as coordinate transformation, data subsetting, data supersetting, format changes, noise removal, computations such as frequency analysis, and data synchronization

P2PSDE Communities



Definitions

- Peer: One belonging to the same societal group especially based on a common interest.
- Peer Group: A number of individuals assembled together or having some unifying relationship.
- Service: a facility supplying some public demand.
- Provider: Someone who supplies or makes a service available.
- Customer: Someone who uses or accesses a service.
- Collaboration: To work jointly with others or together especially in an intellectual endeavor
- Application: a program that performs one of the important tasks for which a computer is used

587 Staffing Overview

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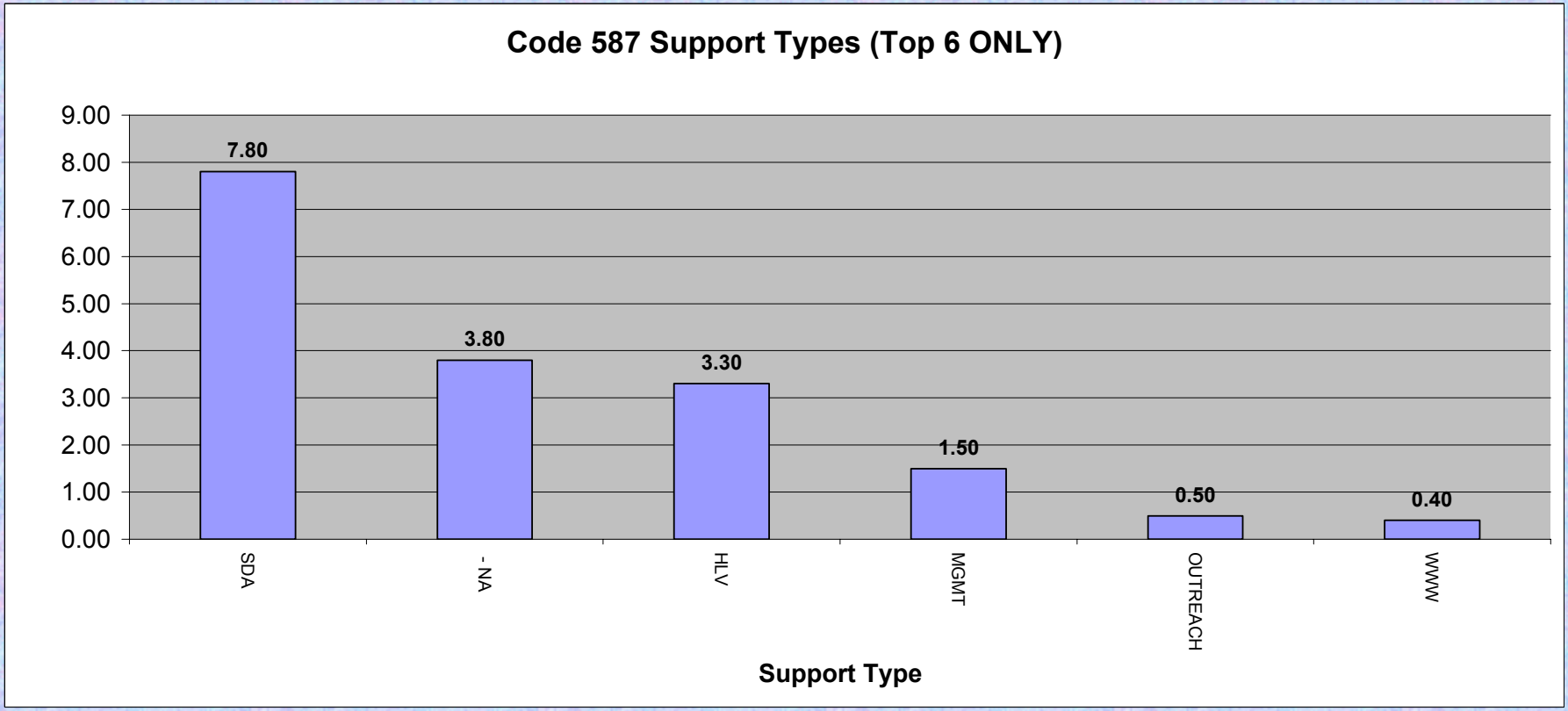
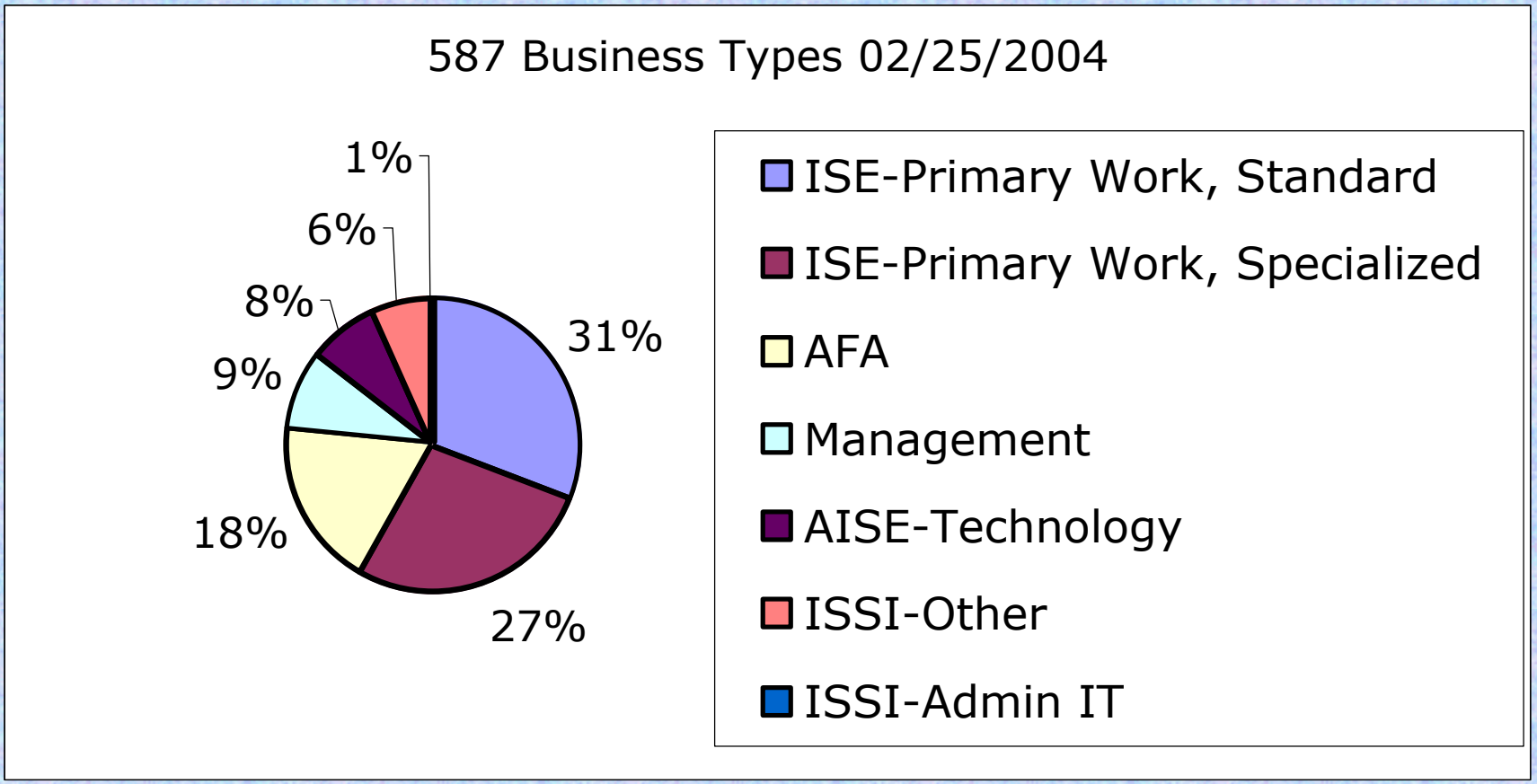


587 Staffing Overview



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587 Staff Transitions

- Edwin Vaughan: Retirement 01/03/2004
  - ISE-Primary Work, Standard: -1
- Matt Holland: Transition to P2PSDE
  - AISE-Technology: +.5
  - ISE-Primary Work, Standard: -.5
- Frances Qian: Coop Conversion 02/23/2004
  - ISE-Primary Work, Specialized: +1

Project Profile

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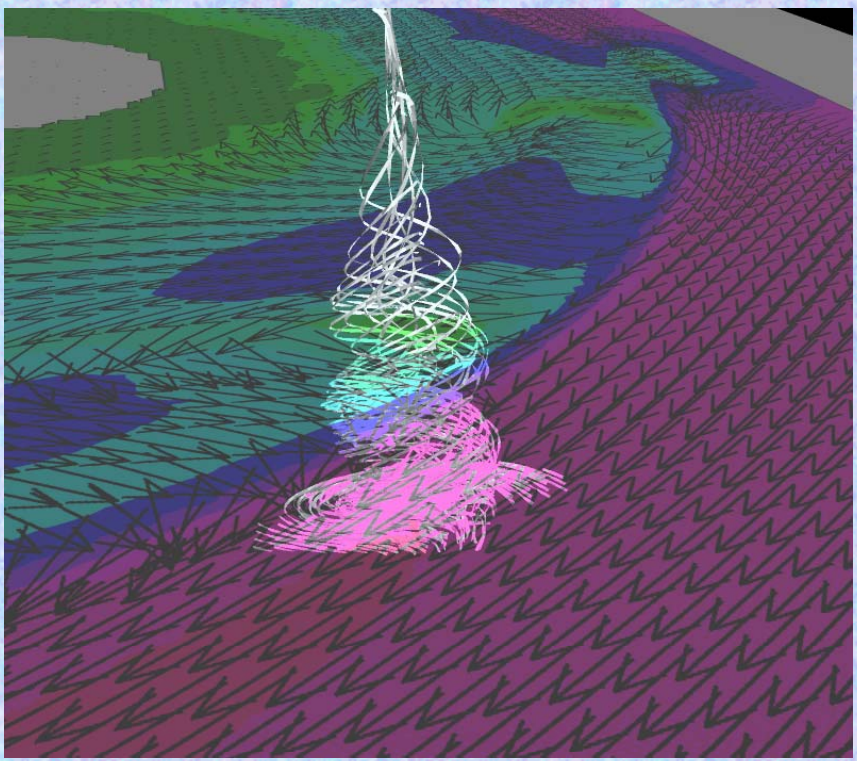
Project	Code	Dec	Jan	Feb	CS	Delta CS	Comments
ESDIS/EDIO	423	G	G	G	1	0	DAAC USWG meeting at Langley
P2PSDE	587	Y	G	G	0.8	0	Project plan final version complete; Protype peer interface complete
ADMA	587	Y	Y	Y	1	1	Igor Eberstein Unallocated
NGTRDM	632	Y	Y	G	1	1	Coop F. Qian hired full-time
SSVL	632	G	G	G	0.6	0	Developed an IDL Virtual Machine-based tool to process IMAGE FUV auroral data for quick turnaround for press releases and public outreach. Participated in study of 3-D vortices in the magnetosphere (Kelvin-Helmholtz instability), creating tools for data exploration and analysis.
LASP	680	Y	Y	Y	2	0	No SOW for LASP Working issue with 680
LEP	690	G	G	G	1	0	On-Going
CASSINI_CAPS	692	G	Y	Y	0	-1	ED Vaughan Retirement
ViSBARD	692	G	G	G	0.4	0	Ported software to Linux and Macintosh platforms. Enhanced animation & movie-making capabilities
SWE	692	G	G	G	0.2	-0.3	Matt Holland moved to 50% IRAD
MTCT	692	G	G	G	0.3	-0.2	Multispacecraft Timeseries Correlation Techniques
CCMC	696	G	G	G	2.4	0	Runs on Request system has fully integrated 2 new models into the system. An adaptive grid description scheme has been added to CDF files. Interpolation routine completed that utilizes BATSRUS CDF files
CMDPS/ST-5	696	G	G	G	0.3	-0.3	Finished modifying the plot data on a time dependent axis in IDL. Modified the current IDL program to allow future satellites to be included in the program for data analysis
SVS	930	G	G	G	1	0	Added access to listing of SVS information on Goddard TV tapes for public use when ordering SVS material on tape. Designed a Relational Database Schema for the next generation of the SVS Database.
HPC	930	G	G	G	1	0	Set-up the procedures for investigators to gain Sponsor acccounts and User ID's to access the super computers in Code 930
HHT	971	G	G	G	0.5	0	On-Going
ANACM	971	G	G	G	0.5	0	Generating the finer resolution grid: going from 150x142 to 256x256 grid
LIS	974	G	G	G	2	0	The LIS "Card File" Generator is complete and in testing. Allow LIS Model user to update run parameters and submit jobs
Total					16	0.2	

SSVL Images



- Participated in study of 3-D vortices in the magnetosphere (Kelvin-Helmholtz instability),
- Creating tools for data exploration and analysis.
- Intermediate results have been presented at two conferences.

Acronyms

ANACM	Arctic-North Atlantic Climate Modeling
CCMC	Community Coordinated Modeling Center
CDF	Common Data Format
CMDPS	Common Magnetometer Data Processing System
DODS	Distributed Oceanographic Data System
ESDCD	Earth and Space Science Computing Division
FITS	Flexible Image Transport System
GrADS	Grid Analysis and Display System
GRIB	Gridded Binary
HDF	Hierarchical Data Format
IDL	Interactive Data Language
KP	Key Parameter
LASP	Laboratory for Astronomy and Solar Physics
LDAS	Land Data Assimilation System
LEP	Laboratory for Extraterrestrial Physics
LIS	Land Information System
LHEA	Laboratory for High Energy Astrophysics
LSM	Land Surface Model
LWS	Living with a Star
MPI	Message Passing Interface
MTCT	Multi-spacecraft Time Series Correlation Techniques
NetCDF	Network Common Data Forma
P2PSDE	Peer-to-Peer Science Data Environment
PI	Principle Investigator
PWG	Polar, Wind & Geotail
SVS	Scientific Visualization Studio
ViSBARD	Visual System for Browsing, Analysis, and Retrieval of Data